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Recombinant Acremonium chrysogenum strains for the industrial production of cephalosporin.

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Conventional strain improvement programs based on random mutagenesis and rational screening have meant valuable results to the antibiotic producing companies. The development of recombinant DNA techniques and their applications to the industrially-used cephalosporin-producing fungus Acremonium chrysogenum has provided a new tool, complementary to classical mutation, promoting the design of alternative biosynthetic pathways making it possible to obtain new antibiotics and to improve cephalosporin production. Yield increases have been achieved by increasing the dosage of the biosynthetic genes cefEF (deacetoxycephalosporin C expandase/hydroxylase) and cefG (deacetylcephalosporin C acetyltransferase) or enhancing the oxygen uptake by expressing a bacterial oxygen-binding heme protein (Vitreoscilla hemoglobin). New biosynthetic capacities such as the production of 7-aminocephalosporanic acid (7-ACA) or penicillin G have been achieved through the expression of the foreign genes dao (D-amino acid oxidase) coupled with cephalosporin acylase or penDE(acyl-CoA:6-APA acyltransferase) respectively. Confined manipulation of the above-mentioned recombinant strains must be performed according to standing rules.

Publication Types:
- Review
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